City of Pleasanton Wi-Fi System
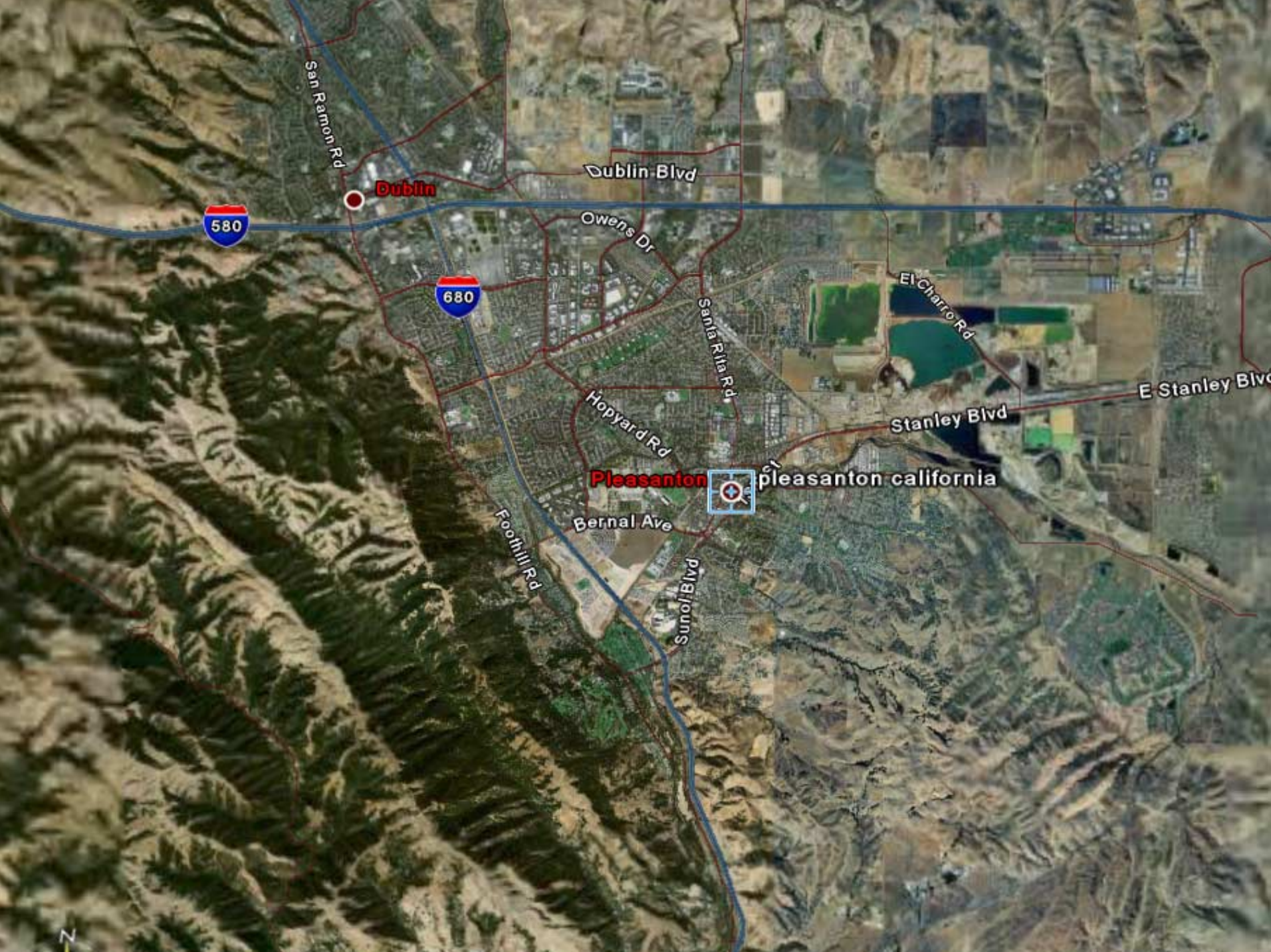
Background

- 100 Traffic Signals
- 92 connected through copper/fiber
- 8 signals with no connection to City

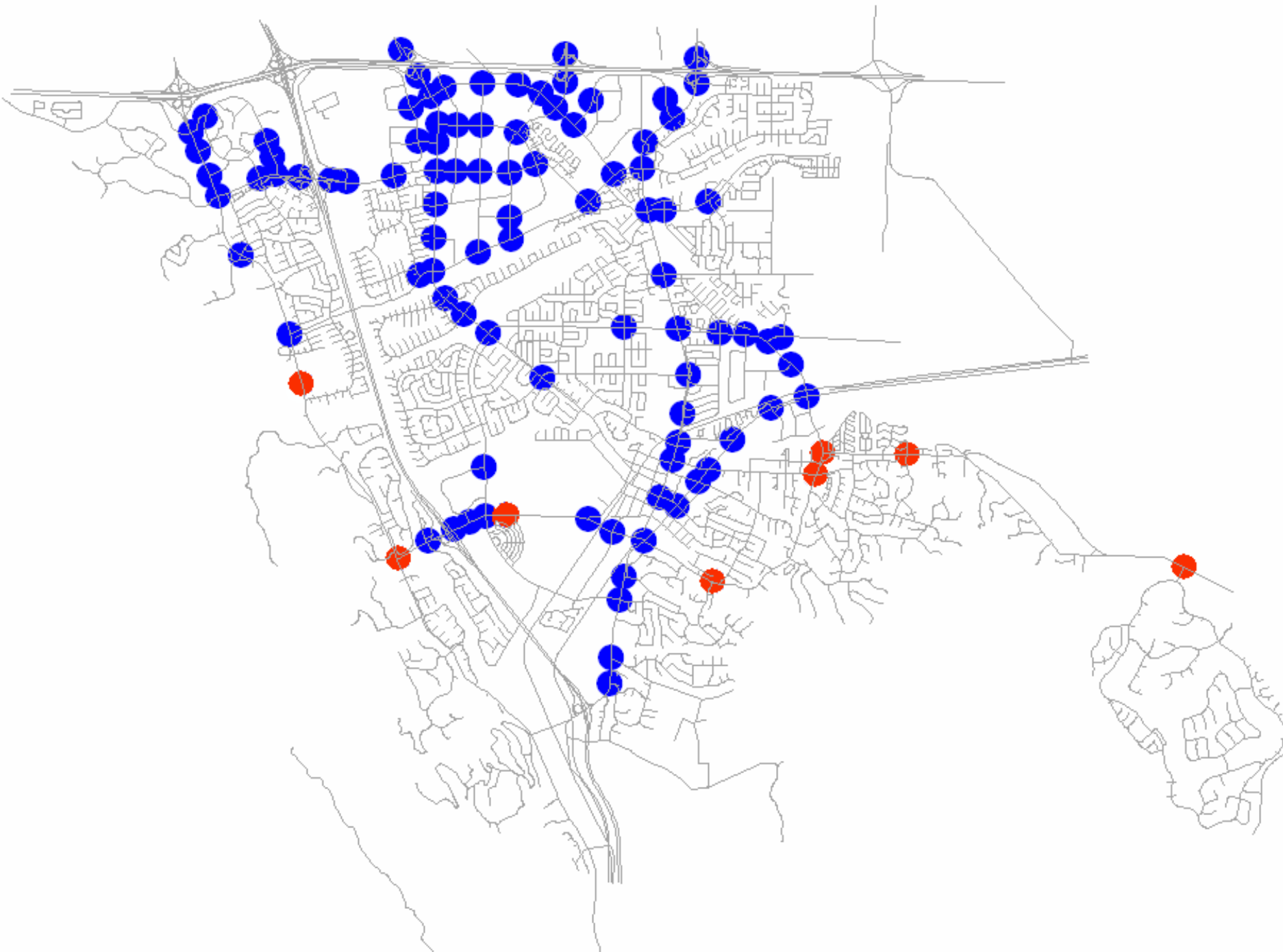THE CITY OF
PLEASANTON
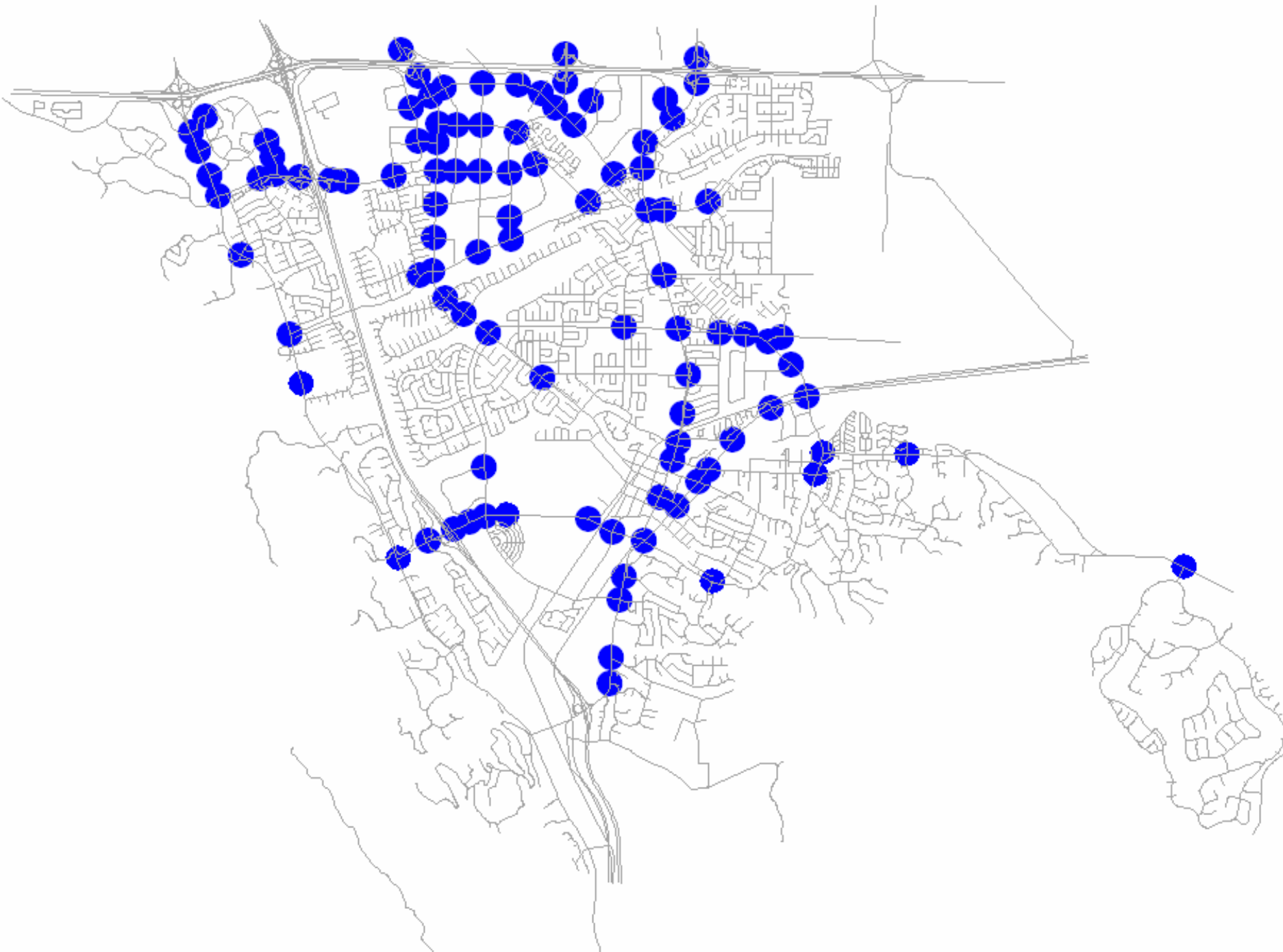
WI-FI PROJECT

- WiFi project goal to bring 4 of 8 signals online

- Equipment selected in conjunction with Police Department remote access project

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Amador Valley
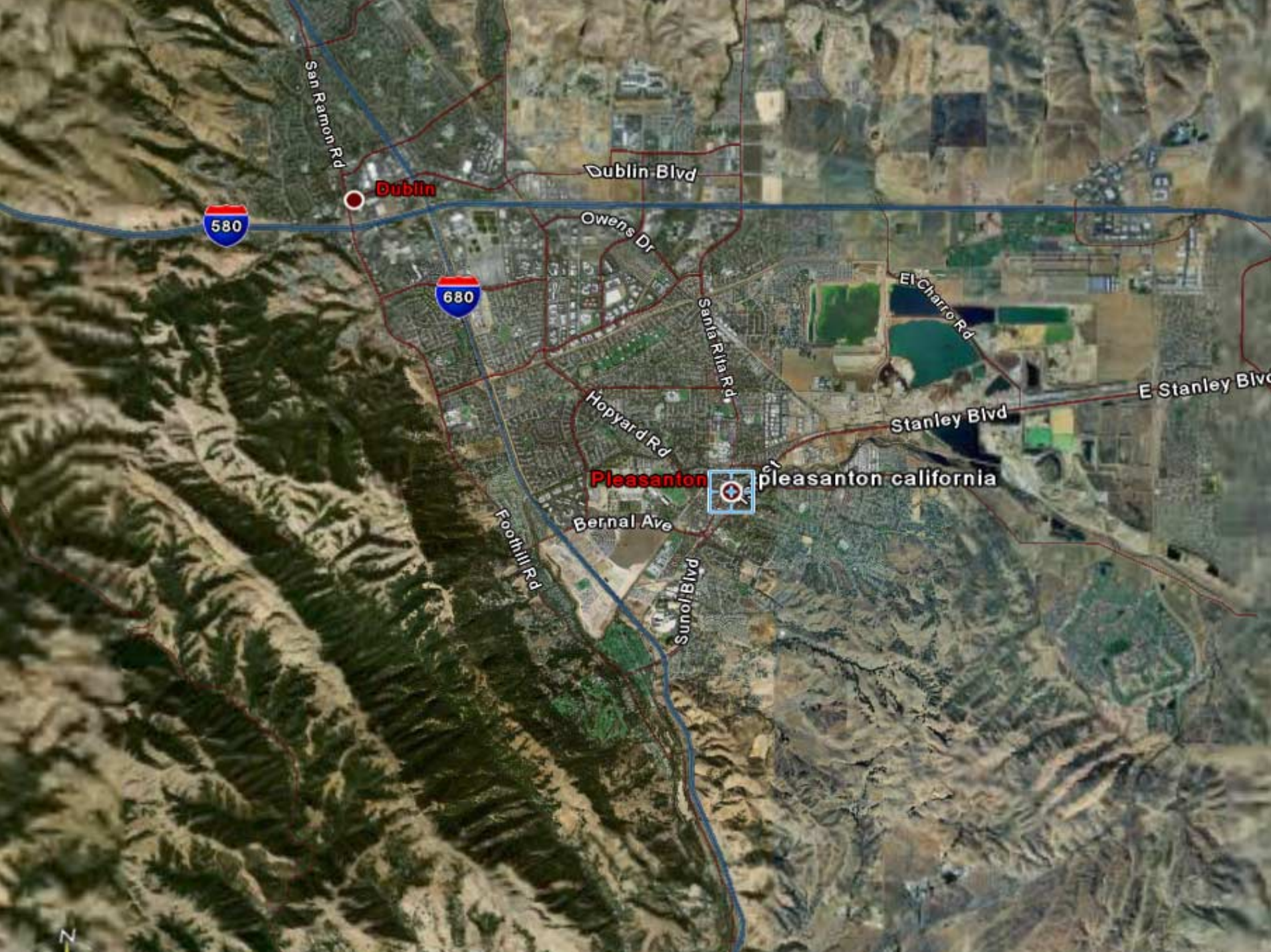
Pleasanton Canal

123 main street pleasanton california

680

Muirwood Dr   Olive Dr

4375 Foothill Rd. Pleasanton

Poorly placed Hill

City Hall

Field Equipment

5G Wireless "G-Force" 9210
Access Points

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Field Equipment

•5G Wireless "Wave Receiver"
9210 CPE Single Panel

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Field Equipment

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Field Equipment

•Cisco 1721 Modular Access Routers

Field Equipment

- Moxa Environmentally-Hardened Video Servers

WI-FI PROJECT
Equipment

- 802.11b technology used for point to multi-point capability

- Throughput levels: 4 mbps up, 4 mbps down

- Video feed: 27 frames per second

- Roundtrip Packet Time: 12 ms

WI-FI PROJECT
Hurdles

- Topography was done at location off by approximately 500 feet.
  - Contractor mis-identified location of PD Tower
  - This created problems with mounting height of panels
  - We raised the panel height but continued to get signal loss.

Solution
In process of bouncing to nearest intersection as a relay

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WI-FI PROJECT
Hurdles

- Contractor did not properly ground field equipment

  – Static Electricity wiped out 2 routers before problem was identified

Solution
Hire Contractor with some experience

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WI-FI PROJECT
Hurdles

- Existing Traffic Operation Center on separate network than City's IT Network
  - Additional Cabling needed from PD tower to TOC
  - IT Assistance cumbersome because they do not know TOC setup.
  - Adding PD to user list required additional hardware

Solution

Need to specify Network setup prior to advertisement

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WI-FI PROJECT
Hurdles

- Existing TOC Hardware difficult to configure
  - Alpine Router used at TOC and Wi-Fi Contractor Cisco Certified

Solution
Future installations to specify type of existing routers

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WI-FI PROJECT
Hurdles

- Did not clearly indicate Point to Multi-point operation for future PD use
  - An additional Access Point would be needed to create area hot spot
  - Cisco Router at PD was not VLAN capable, which was needed for multiple VLAN on single fiber.

Solution
Future installations to specify type field equipment needed and type of service required

WI-FI PROJECT
Overall Performance

- Excellent color video from 4 to 6 cameras at a time

- Traffic upload/download speeds faster than copper modem and equal to fiber modem

- Equipment allows instant access to any ethernet ready component

- 30 degree useful angle works as intended

- 2 mile range tested without a problem

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WI-FI PROJECT
Cost

- Total cost to install all hardware on the 4 intersections and bring system on-line $47,000.

- Bids to hard line fiber 1,700 feet $44,000 to 46,000 (connection to 1 signal).

WI-FI PROJECT
Future Plans

- We continue to look at Wi-Fi as an option.

- Would like to bring remaining signals on-line (no funding established at this time).

- IT Department exploring other wireless options available